

**Updated COVID-  
19 Models  
for  
Wiikwemkoong  
Unceded  
Territory**

Prepared for Wiikwemikong Health Centre

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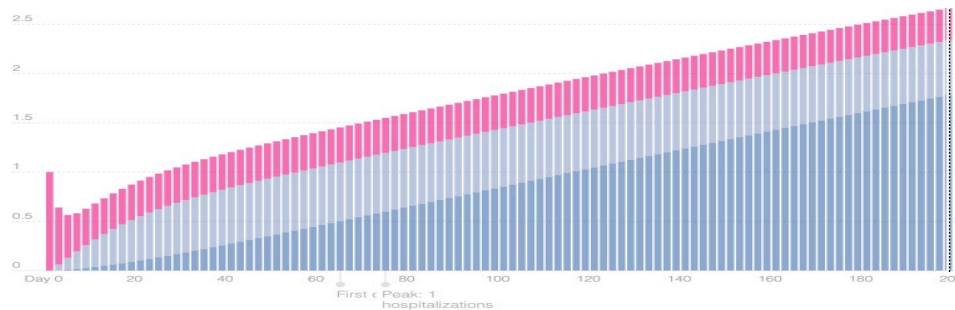
May 4, 2020

# Since the April 6 version of the models:

- There are still no confirmed cases in Wiikwemkoong.
- As of Friday, 45 members have been tested, 44 are negative and 1 pending (including Wikwemikong Nursing Home).
- The overall COVID-19 curve in Ontario has peaked for this wave.
- However, the number is just beginning to rise in First Nations.
- As of last week, the number of First Nations people in Ontario who have tested positive is 61, with approximately  $\frac{1}{2}$  in a First Nations community.

# Continue Current Scenario:

- continue travel ban and strong physical distancing measures
- assume that each infected person only transmits the virus to one other person



**This approach could contain COVID-19 over six months to:**

- Total cases: 24
- Total fatalities: 2
- Maximum people in hospital at once: 1

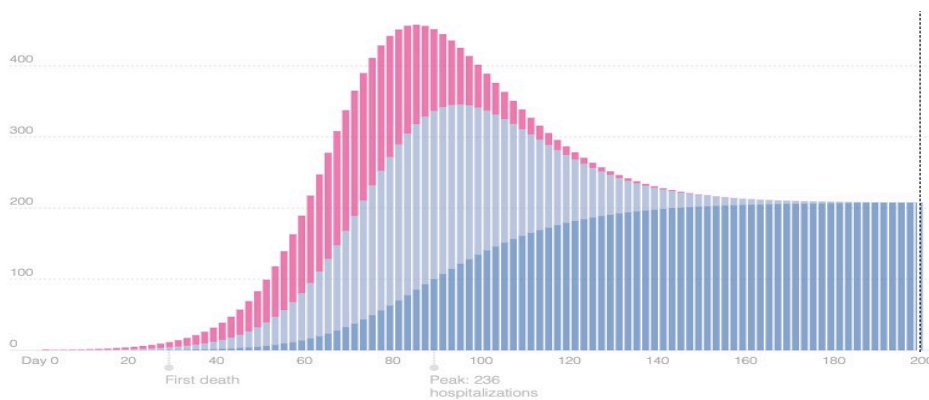
Epidemic Calculator used for this report is publicly available at: <http://gabgoh.github.io/COVID/index.html>

# Alternate Scenarios

## Scenario 1:

### Maintain physical distancing measures

- maintain physical distancing measures that would cut average daily contacts in half compared to pre-pandemic
- assume that each infected person transmits to two others



### Over six months:

Total cases: 2,599

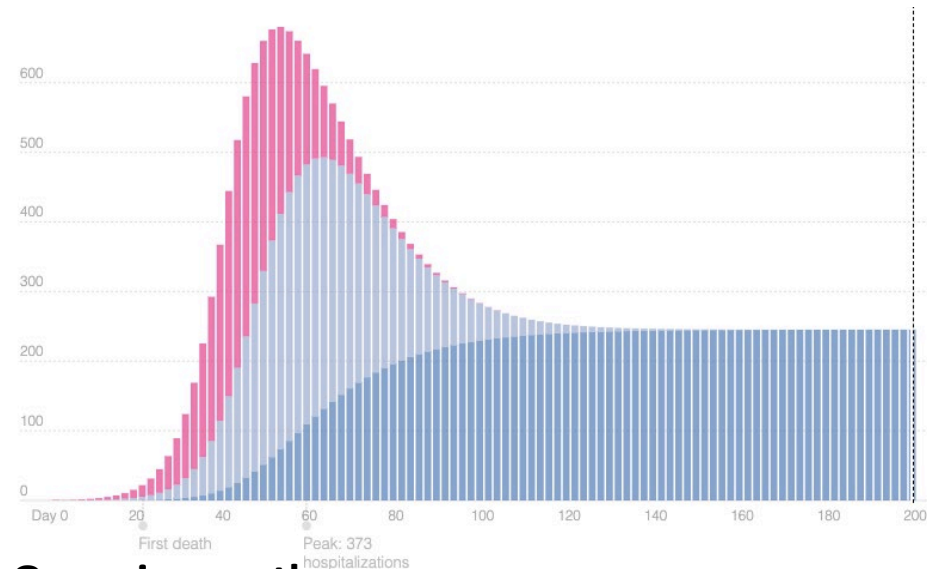
Total fatalities: 208

Maximum people in hospital at once: 236

## Scenario 2:

### Remove travel ban and all restrictions

- return to pre-pandemic activity
- assume that each infected person transmits to three others



### Over six months:

Total cases: 3,067

Total fatalities: 245

Maximum people in hospital at once: 373

# Risk of severe outcomes:

- Chronic Obstructive Pulmonary Disease (COPD)
  - more than doubles the risk of death (2.7 times)
- Diabetes
  - increases risk of death by 59%
- Hypertension
  - Increases risk of death by 58%
- Obesity
- Smoking
- Current cancer treatment

# Risks in Wiikwemkoong

(based on the 2127 individuals in the Family Health Team EMR)

- 423 (19.8%) have one of the key conditions: diabetes, hypertension, asthma or COPD
  - 247 have diabetes (11.6%)
  - 218 have hypertension (10.2%)
  - 108 have asthma or COPD (5.0%)
- 96 people over age 45 have both hypertension and diabetes
  - the highest risk group is the 51 people over age 65 with both hypertension and diabetes

# Key messages

- Models are helpful to understand what MIGHT happen but do not predict what WILL happen.
- Early action to reduce the spread of COVID-19 is the best way to reduce the number of people who might get sick or die from COVID-19.
- Chronic conditions increase the risk of bad outcomes of COVID-19 - and some groups are at high risk.
- Wiikwemkoong's actions to date are on the right track to reduce the impact of COVID-19.

# APPENDIX



## Assumptions made in the new models

- The models assume that higher household sizes and other living conditions impact the average number of people that each infected person will transmit the virus to. We will continue assume that each COVID-19 case in Wiikwemkoong will infect 3 others if there are no restrictions.
- The case fatality rate (number of people who die out of those who are infected) is higher when people are older and when they have certain underlying chronic conditions that make the virus more severe.
  - In Canada, the case fatality rate has risen to 5.5% and 6.7% in Ontario. This has been as high as 10% in some populations around the world.
  - In our last model, we assumed 5%. However, we have adjusted based on the increased case fatality rate in Ontario and the higher rates of chronic disease, particularly diabetes, in Wiikwemkoong. We will assume a case fatality rate of 8%.
- The hospitalization rate in Ontario is 11.6%. Experience from H1N1 shows that on-reserve First Nations have three times higher hospitalization rates, so we have assumed that the rate will be 34.8%.

- Epidemic Calculator = <http://gabgoh.github.io/COVID/index.html>
- Population = 3,262 (as close as the model tool will come)
- # Initial infections = 1
- Reproduction number  $R_0$  = 2 for Scenario 1 and =3 for Scenario 2
- Length of incubation period = 5.12 days
- Duration patient is infectious = 2.9 days
- Case fatality = 8.00%
- Time from end of incubation to death = 20 days
- Length of hospital stay = 10 days
- Recovery time for mild cases = 14 days
- Hospitalization rate = 34.80%
- Time to hospitalization = 8 days

# Modelling Parameters